

CLAIMS

What is claimed is:

1. A wet electrophotographic printer, comprising:
 - a photosensitive body to form a latent image;
 - a developer transfer body rotating to face the photosensitive body to transfer a liquid developer to the photosensitive body to form a visible image according to the latent image;
 - a first developing restricting member disposed with respect to the developer transfer body to restrict at least one of an amount and a density of toner particles of the liquid developer supplied to the developer transfer body, and supply the at least one of the amount and the density of the toner particles into a nip between the developer transfer body and the photosensitive body;
 - a housing divided into a developing chamber and a developer storing chamber by a partition and containing the developer transfer body and the first developing restricting member; and
 - a developer supply unit disposed below the partition in the housing to supply the liquid developer from the developer storing chamber into the developing chamber;
 - wherein the developer transfer body and the first developing restricting member are disposed to form a border between an upper portion of the developing chamber and an upper portion of the developer storing chamber together with an upper portion of the partition.
2. The printer according to claim 1, wherein the upper portion of the developing chamber communicates with an inlet of a second nip between the developer transfer body and the first developing density restricting member to supply the liquid developer into the second nip therebetween.
3. The printer according to claim 2, further comprising:
 - a second developing density restricting member disposed with respect to the developer transfer body; and

wherein the upper portion of the developer storing chamber communicates with an inlet of a third nip between the developer transfer body and the second developing density restricting member so as to withdraw the liquid developer of a low density generated at the third nip during a development, and to prevent supply of the liquid developer of the low density into the second nip between the developer transfer body and the first developing density restricting member.

4. The printer according to claim 3, wherein the housing has an elongated shape extending longitudinally to form a longitudinally elongated developing chamber and a longitudinally elongated developer storing chamber.

5. The printer according to claim 4, wherein the developer transfer body and the first and second developing density restricting members are disposed with respect to one side of the photosensitive body.

6. The printer according to claim 5, wherein the developer storing chamber comprises:

a lower portion having a shape for which a bottom converges toward the developer supply unit positioned below the partition so as to prevent a generation of air bubbles or sediment due to a stagnation of the liquid developer until after all the liquid developer is consumed.

7. The printer according to claim 6, wherein the lower portion of the developer storing chamber comprises:

an inclined surface inclined toward the developer supply unit.

8. The printer according to claim 6, wherein the developing chamber comprises: a lower portion having a narrow and elongated tube shape to reduce a developer stagnating volume thereof and a developer supplying capacity of the developer supply unit.

9. The printer according to claim 1, wherein the developer supply unit comprises:

a roller having a porous member formed at an outer surface thereof to absorb the liquid developer.

10. The printer according to claim 1, wherein the developer supply unit comprises: an impeller.

11. The printer according to claim 3, wherein:
the developer transfer body comprises:

a developing roller;

the first developing restricting member comprises:

a deposit roller; and

the second developing restricting member comprises:
a metering roller.

12. The printer according to claim 5, further comprising:
a photosensitive body cleaner disposed with respect to a remaining side of the photosensitive body and formed separately from the housing.

13. The printer according to claim 12, wherein the photosensitive body cleaner comprises:

a cleaning blade removing a remnant of used developer from the photosensitive body; and

a used developer reservoir storing the remnant of the used developer removed by the cleaning blade.

14. The printer according to claim 12, further comprising:
a laser scanning unit disposed below the photosensitive body between the housing and the photosensitive body cleaner.

15. The printer according to claim 1, where the porous member of the roller is sponge.

16. A wet electrophotographic printer having a housing with a photosensitive body therein to form a latent image, comprising:

a transfer body disposed in the housing adjacent to and facing the photosensitive body to transfer a liquid developer to the photosensitive body to form a visible image according to the latent image; and

a restricting unit, at least a part of which is adjacent to and contacting with the transfer body to restrict toner particles of the liquid developer supplied to the transfer body, and to supply the toner particles into a nip between the developer transfer body and the photosensitive body;

wherein the housing comprises:

plural chambers separated therebetween by a boundary of a supply unit, a partition, the restricting unit, and the transfer body such that the supply unit supplies the liquid developer from one chamber of the housing to another chamber of the housing and the restricting unit and the transfer body are disposed to extend the boundary to the photosensitive body.

17. A wet electrophotographic printer having a housing with a photosensitive body therein to form a latent image, comprising:

a transfer body disposed in the housing adjacent to and facing the photosensitive body to transfer a liquid developer to the photosensitive body to form a visible image according to the latent image;

wherein the housing comprises:

plural chambers separated therebetween by a boundary of a supply unit, a partition, the restricting unit, and the transfer body such that the supply unit supplies the liquid developer from one chamber of the housing to another chamber of the housing, a lower portion of the housing having a shape for which a bottom converges toward the supply unit positioned below the partition so as to prevent a stagnation of the liquid developer.

18. A wet electrophotographic printer, comprising:

developing and metering rollers; and

a developing unit in which a developer storing chamber communicates with an inlet of a nip between the developing roller and the metering roller, and uniformly supplies a high density liquid developer on a photosensitive body forming a visible developer image during a development.

19. The printer according to claim 18, further comprising:
a deposit roller, wherein in the development, the liquid developer of a low density generated at a first nip between the developing roller and the metering roller is not directly supplied to a second nip between the developing roller and a deposit roller, but is supplied after being withdrawn to the developer storing chamber and mixed therein to supply the high density liquid developer uniformly on the photosensitive body.